

Figure 1. Depiction of communication system showing placement of conventional encryption functions and location of new "distortion encryption" functions.

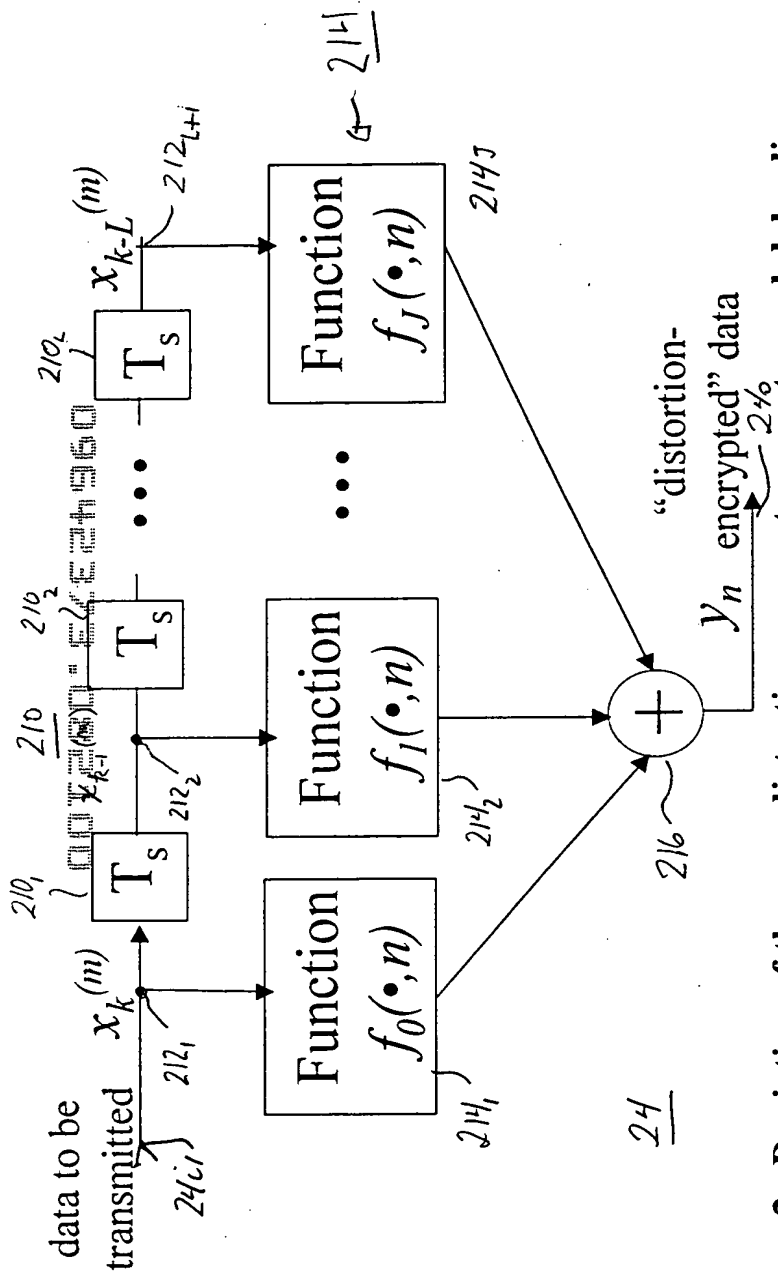


Figure 2. Depiction of the new distortion encryptor as a tapped delay line.

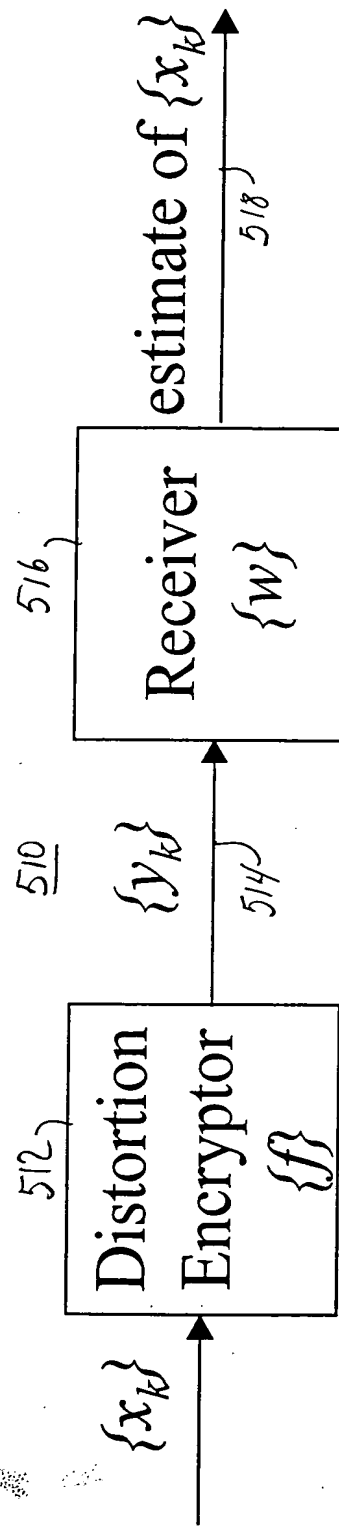


Figure 5. Illustration of simulation configuration for two-tap example.

SC'N 12

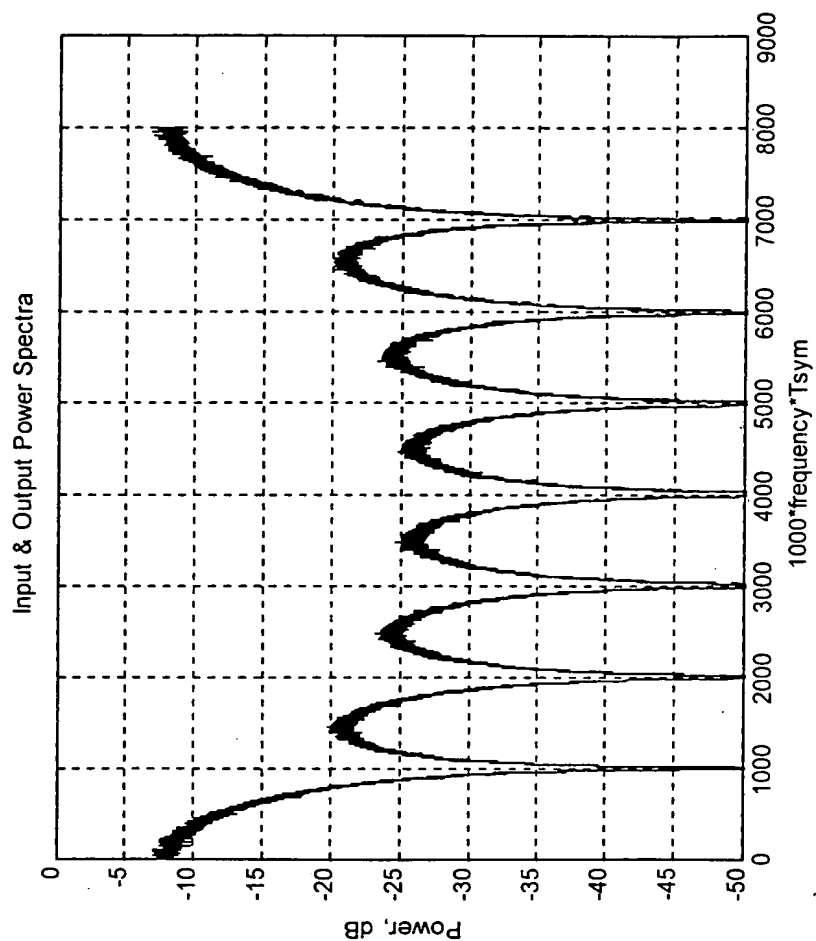


Figure 4. Power spectra of the input and output signals for the two-tap example, obtained by averaging 100 independent blocks of 1000 symbols each.

39MP2828
D. MATOLAK
Sheet 3 of 5

Table 1. Simulation results for the two-tap example.

Case	Receiver Type	Symbol Error Probability P_s
1	1. "matched" VA	0
2	2. "unmatched" VA, with channel coefficients $w_0=0.8$, $w_1=0.6$ (assumes a <i>linear</i> distortion)	0.251
3	2. "unmatched" VA, with channel coefficients equal to LS estimates over 100 known symbols, $\mathbf{w} = [0.8157 - 0.0109j, 0.1081 + 0.0402j]$ (assumes a <i>linear</i> distortion)	0.091
4	3. linear EQ, with (3) coefficients equal to LS estimates over 100 known symbols, $\mathbf{w} = [0.8201 - 0.0166j, 0.114 + 0.0272j, -0.0513 - 0.02264j]$	0.058
5	3. linear EQ, with (7) coefficients equal to LS estimates over 100 known symbols, $\mathbf{w} = [0.8382 - 0.0134j, 0.0964 + 0.0427j, -0.0827 - 0.0399j, -0.0191 - 0.0243j, 0.1069 + 0.0523j, -0.0129 + 0.0910j, 0.0346 - 0.0394j]$	0.18
6	3. linear EQ, with (11) coefficients equal to LS estimates over 100 known symbols, $\mathbf{w} = [0.8372 + 0.0362j, 0.0881 - 0.0258j, -0.0700 + 0.0860j, 0.0001 + 0.0368j, 0.1330 - 0.0748j, -0.0013 - 0.0995j, 0.0405 + 0.0099j, 0.1328 - 0.0366j, 0.0506 + 0.0960j, 0.0420 - 0.0022j, 0.0552 - 0.0444j]$	0.222

Fig. 6

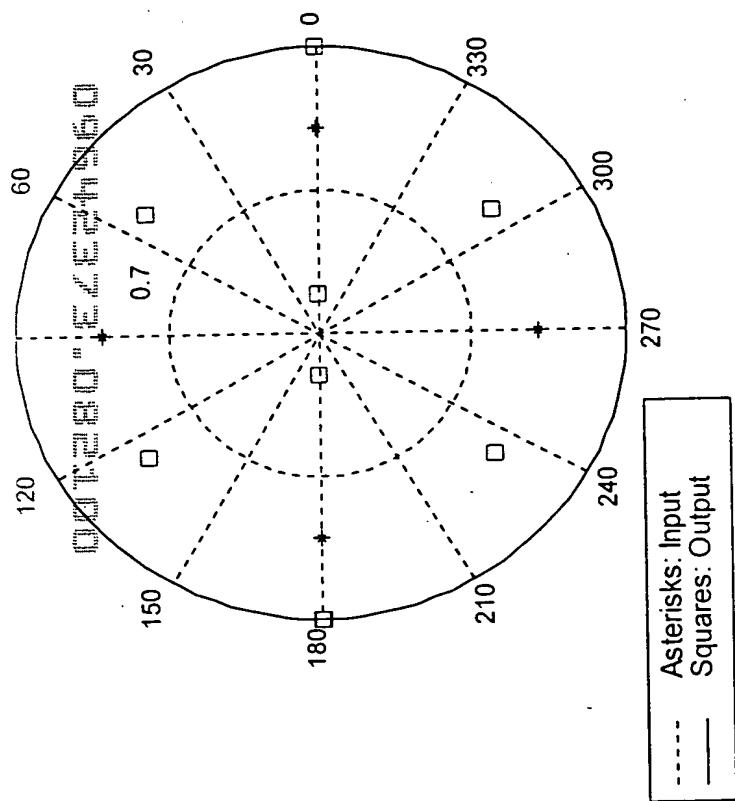
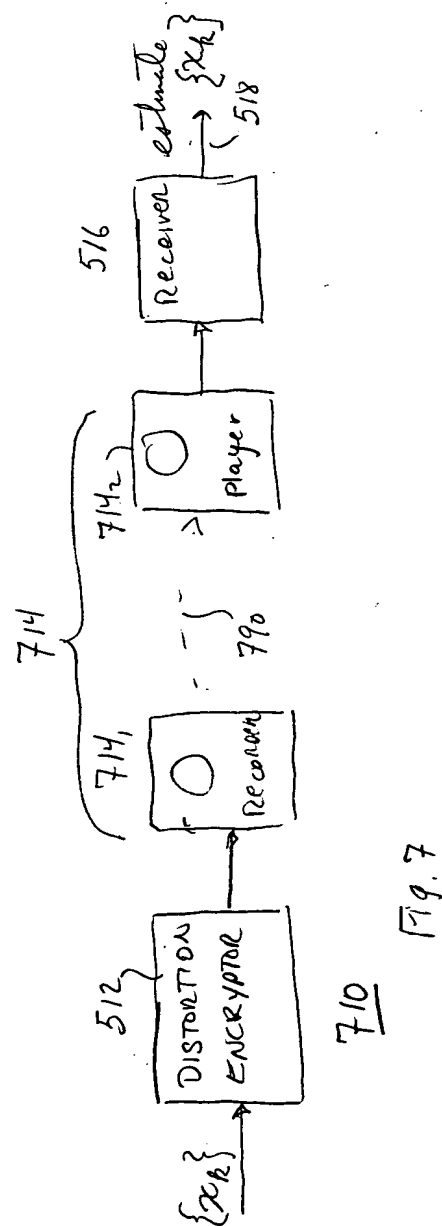


Figure 3. Signal constellation for the input and output signals for the two-tap example.



39MP2828
D. MATOLAK
Sheet 5 of 5